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The Economic Impact of the Rowe Sanctuary and Sandhill Crane Migration on the Central Nebraska Region

Authors:

**Richard Edwards
Eric Thompson**

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Bureau of Business Research
Department of Economics
College of Business Administration
University of Nebraska—Lincoln
Dr. Eric Thompson, Director

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Lincoln

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Executive Summary

Thousands of visitors travel to central Nebraska each year to view one of nature's most spectacular sights – the gathering of hundreds of thousands of sandhill cranes (*Grus canadensis*) along the Platte River. As well as experiencing nature, the crane-watchers bring new spending to the economy of central Nebraska. In addition, crane-related conservation research and education centers obtain grants and other funds to finance their operations, also bringing new spending to the area.

This study collected financial data and conducted surveys to assess the impact of the Audubon Rowe Bird Sanctuary on the central Nebraska economy in 2009. We use the IMPLAN software to calculate the relevant economic multipliers. We considered both the operational expenditures and spending by tourists attracted to the Rowe Sanctuary. We find that the total economic impact of Rowe's operations to be \$0.69 million, and the total economic impact of spending by Rowe's visitors to be \$1.39 million. Thus the overall impact of Rowe Sanctuary on the central Nebraska economy is \$2.08 million in 2009.

We repeat this analysis, using additional financial data we collected and additional survey data, to assess the combined impact of the principal crane-related conservation research and education centers (including Rowe) on the economy of central Nebraska. We use the IMPLAN software to calculate the relevant economic multipliers. We considered both the operational expenditures and spending by tourists attracted to these centers. We find that the total economic impact of the combined centers' operations to be \$2.25 million, and the total economic impact of spending by the centers' visitors to be \$2.90 million. Thus the overall impact of the centers on the central Nebraska economy is \$5.15 million in 2009.

Finally, using data we collected or generated combined with other data from other studies, we provide an estimate of the overall or "global" impact of the sandhill crane migration on the central Nebraska economy. Because the validity of this estimate necessarily relies on data obtained from other studies and on certain plausible though speculative assumptions, we necessarily have somewhat less confidence in this estimate. Given this caveat, our estimate of the global impact of the sandhill crane migration on the central Nebraska economy is \$10.33 million per year.

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Chapter 1: Introduction¹

Thousands of visitors travel to central Nebraska each year to view one of nature's most spectacular sights – the gathering of hundreds of thousands of sandhill cranes (*Grus canadensis*) along the Platte River. Jane Goodall, making her fifth visit in 2008, declared the migration of the sandhill cranes to be "one of the seven wonders of the natural world". Such visitors will also see tens of thousands of other waterfowl and may even catch a glimpse of one of the few remaining whooping cranes (*Grus americana*). Bird-watchers, nature enthusiasts, and ordinary tourists agree that it is a breath-taking encounter.

In addition to experiencing nature, the crane-watchers bring new spending to the economy of central Nebraska. This report assesses the impact of that spending on a twelve-county region that runs from Grand Island, NE, in the east to Kearney, NE, in the west, an approximately 40-mile stretch of the Platte River in 2009.²

Wildlife-viewing has become a growth industry in the Great Plains. Hunting and fishing activities generate the most nature-based revenues, about 73% in 2006 (US Fish and Wildlife, 2006), but wildlife-viewing is of increasing interest because it is the most rapidly-growing in number of participants and because it perhaps holds the most potential for economic growth.

Our study presents a new estimate of the economic impact of the annual migration of the sandhill cranes, based on surveys and analysis conducted during 2009. The particular focus of our study is the impact of the Audubon Rowe Bird Sanctuary and more generally of conservation research and education centers. We begin, in Chapter 2, by assessing the economic impact generated due to the direct expenditures of and tourist spending generated by the Rowe Bird Sanctuary. In Chapter 3 we broaden the estimate to include the principal conservation research and education centers combined (including Rowe). In Chapter 4 we assess the economic impact of all direct expenditures and visitor spending related to the crane migration. Chapter 5 provides a summary of our economic impact estimates.

¹ The authors would like to thank Bill Taddicken, Filipe Chavez-Ramirez, Gene Hunt, and Eugene Ayol.

² By "2009" we include the spring, 2009 crane migration season and, where relevant, the Fiscal Year 2009 (that is, July 1, 2008 to June 30, 2009) expenditures of the research and education centers.

Chapter 2: The Economic Impact of On-Site Activity at and Visitors Attracted to Rowe Bird Sanctuary

This Chapter examines the economic impact from the operations expenditures of and tourists attracted by the Rowe Bird Sanctuary on central Nebraska. Specifically, a positive impact occurs when Rowe brings new money to the central Nebraska economy by attracting donations and grants to support its operations, research, and conservation activities and when it attracts tourists to the area who spend money in hotels, restaurants, and other businesses. This new spending supports output, employment, and wages in the regional economy. This Chapter utilizes financial reports and other data maintained by Rowe Bird Sanctuary and a survey of visitors to Rowe to estimate the amount of money attracted to the central Nebraska economy. We then employ this data in economic models to estimate the total impact on the central Nebraska economy.

A. Economic Impact of Direct Expenditures: Methodology

The first step in estimating the economic impact of the Rowe Bird Sanctuary on central Nebraska is to estimate how much new money is attracted to the region for its operations, research, and conservation. External demand for these services is represented in large part by the donations and grants that outside individuals and organizations make to support Rowe. This external demand represents the “direct effect” on the central Nebraska economy from the operational expenditures of Rowe Bird Sanctuary.

In addition to this direct effect, there is also a “multiplier” effect on businesses throughout central Nebraska. The multiplier effect occurs as the initial spending on research, conservation, or education activities of Rowe circulates further within the regional economy, creating additional sales and employment opportunities in other businesses. For example, there is a multiplier effect when Rowe purchases services from central Nebraska companies such as accounting services, legal services, or supplies. There is also a multiplier effect when Sanctuary employees spend their paychecks throughout the local economy on typical household expenditures such as food, health care, housing, insurance, apparel, and entertainment. Thus

the multiplier effect captures how businesses throughout the regional economy gain from the money attracted to central Nebraska. Specifically, economic multipliers show the dollars of total impact for each dollar of direct impact.

We used the IMPLAN (Impact Analysis for Planning) Pro modeling software developed by the Minnesota IMPLAN Group to calculate economic multipliers for the central Nebraska region. The IMPLAN is widely utilized for economic impact analysis by federal government agencies, state and local governments, universities, and private businesses. IMPLAN modifies the U.S. Input-Output Accounts for local economies based on detailed economic data for counties, or combinations of counties, to produce a local Social Accounting Matrix.

The left-hand side of Figure 2.1 illustrates how the economic impact of operational expenditures of the Rowe Bird Sanctuary is calculated. We begin with the direct effect, which is external dollars attracted into the central Nebraska region by Rowe. In addition to this direct effect, there is also a multiplier effect on the regional economy. The total economic impact is the sum of its direct effect and its multiplier effect.

The right-hand side of Figure 2.1 illustrates how the economic impact is calculated for visitors attracted to Rowe. The process is the same. We first measure annual off-site spending by Rowe visitors attracted into central Nebraska, as a measure of the direct effect. There is also a multiplier effect and the total economic impact is the sum of the direct effect and multiplier effect.

The overall economic impact from operations is simply the sum of the two economic impacts from Rowe, as is seen at the bottom of Figure 2.1. These two economic impacts are estimated in the balance of this Chapter.

As implied by Figure 2.1, a key issue in calculating the overall economic impact is to estimate accurately the direct effects, that is, Rowe's operations spending (supported by external donations, grants or other support for research, conservation, and education) and off-site spending by tourists.

Figure 2.1
Approach for Calculating Economic Impact from of the Rowe Bird Sanctuary on Central Nebraska

**Economic Impact from
Operation of Rowe Bird Sanctuary**

Direct Effect –
Annual spending at Rowe
Sanctuary operation
supported by grants and
donations

+

Multiplier Effect

=

Total economic impact
from operation of Rowe
Bird Sanctuary

↓

**Economic Impact from
Visitors to Rowe Bird Sanctuary**

Direct Effect -
Annual off-site spending by
Rowe visitors from outside
of Central Nebraska

+

Multiplier Effect

=

Total economic impact
from visitors to Rowe Bird
Sanctuary

↓

Overall Economic Impact of Rowe Bird Sanctuary on Central Nebraska

B. Economic Impact of Direct Expenditures: Estimates

Financial records from Rowe Bird Sanctuary were very used to determine its direct effect on the central Nebraska economy.

As is seen in Table 2.1, Rowe Bird Sanctuary derives nearly all of its revenues from external sources such as grants, donations, and trust transfers. Tourist activities are another important source of revenue. Altogether, we estimate that the Rowe Bird Sanctuary derives 92% of its revenue from external sources (Edwards and Thompson, 2010).

Table 2.1
Sources of Revenue for Rowe Sanctuary in Central Nebraska 2009

Category	Amount (Millions \$)
Volunteer Fees/Tuition	0.004
Transfer from Trust	0.08
Donations	0.11
Grants	0.07
Land Rental	0.00
Store Merchandise	0.08
Tourist Activities	0.10
Other	0.00
Total Revenue	0.44

Source: 2009 Budget of the Rowe Sanctuary

Table 2.2 lists the revenue of Rowe Bird Sanctuary and the share of that revenue that comes from external sources. The Table also indicates that Rowe intended to expend all of its revenue during fiscal year 2009. After making these adjustments, the direct effect from Rowe's operations was \$0.40 million during fiscal year 2009.

Table 2.2
Direct Effect of Rowe Sanctuary on Central Nebraska in 2009

	Rowe Sanctuary
Research and Education Center Operations	
Revenue (millions \$)	0.44
% supported by external donations and grants	92%
% supporting expenditures in 2009	100%
Direct Effect (millions \$)	0.40
Multiplier	1.71
Total Economic Impact (millions \$)	0.69

Source: BBR calculations

Direct effects are a key component of the total economic impact from Rowe's operations on the central Nebraska economy. The other component is the multiplier effect. Economic multipliers were calculated using the IMPLAN Pro model. Economic multipliers show the number of dollars of total economic impact associated with each dollar of direct effect. The multiplier calculated for Rowe Bird Sanctuary expenditures is 1.71. Based on this multiplier, the total economic impact of Rowe's operational expenditures in 2009 was \$0.69 million.

An important component of the overall economic impact is the impact on the labor force, that is, the jobs created in the economy. There was a total jobs impact of 11 full-year equivalent jobs due to the operations of Rowe Sanctuary in 2009.

C. Economic Impact of Generated Tourism: Methodology

This section examines the additional economic impact from off-site spending by visitors to Rowe who are attracted to central Nebraska each year by the annual crane migration. Visitors are typically "tourists" who travel to visit central Nebraska for one day or more. This section addresses their off-site spending in restaurants, gift-shops, lodging, or other businesses in central Nebraska. This off-site spending represents an additional economic impact from the annual crane migration.

In many cases, tourists who view cranes during the migration come to central Nebraska primarily for that purpose. In these cases, their spending during their visit to central Nebraska

can fairly be considered as an economic impact of crane migration. In other cases, the crane migration is not the primary reason visitors come to central Nebraska. For example, they may come to the area primarily to visit family, but then visit a crane viewing site as an activity. But even among this group there are visitors who stay longer in the region because of an opportunity to visit a crane viewing site. The additional amounts that tourists spend due to longer trips are another aspect of the economic impact of the crane migration.

The first step in estimating the economic impact of tourism spending generated by Rowe is to estimate the total number of visitors to Rowe Bird Sanctuary during 2009. Rowe Bird Sanctuary reported an attendance of approximately 12,500 during the migration season itself. Further, there are visitors to the Bird Sanctuary during other parts of the year; we include the spending by these visitors in estimating the impact of the crane migration because even though their visit occurred outside the migration season, they were motivated to visit Rowe by their interest in cranes. In recent years, Rowe has had approximately 2,000 visitors outside of the spring migration season. Therefore, there were approximately 14,500 visitors during the fiscal year 2009. The number was down slightly from recent years due to a severe recession in the U.S. economy.

The second step in estimating the economic impact of tourists is to estimate the direct increase in economic activity in central Nebraska resulting from their presence. As noted above, this additional activity occurs in the form of spending by visitors who came to central Nebraska primarily because of the crane migration (or perhaps for the crane migration and a few other key purposes), or visitors who primarily came to central Nebraska for other reasons but chose to extend their stay longer in order to visit a crane viewing site. This new spending represents a new demand on the central Nebraska economy. It is the direct effect of visitor spending on the economy.

Co-authors and their graduate assistants distributed surveys at Rowe to measure this new spending. Respondents were asked about their country of origin, their zip code (for U.S. visitors), their reasons for visiting central Nebraska, and the length of their trip. The survey included a number of questions about the spending of visitors on the day of their visit, and on whether visitors extended their stay in central Nebraska because of their trip to Rowe Bird

Sanctuary, or came to central Nebraska primarily to visit Rowe. The survey instrument is included in Appendix A.

Surveys were distributed to all arriving visitors to Rowe Sanctuary on March 17, 22, 28, and April 3, 2009, beginning at noon on the four days (two Saturdays, a Sunday, and a Friday). Visitors were asked to complete the survey upon their arrival to the Rowe Bird Sanctuary Visitors Center. Visitors then placed their completed surveys in a box in order to ensure that responses were anonymous.

We approached a total of 411 visitor parties during the 4 days, and 353 completed the survey while 58 declined, for an 86% response rate. We surmise that the high response rate would minimize any concerns regarding non-response bias. The additional spending is a direct effect on the central Nebraska economy. This direct effect is seen on the right-hand side of Figure 2.1, which demonstrates our approach for calculating the economic impact from visitors to Rowe Bird Sanctuary.

In addition to this direct effect from visitors, there is also an additional “multiplier” effect at businesses throughout central Nebraska, as is seen in Figure 2.1. This multiplier effect occurs as the initial spending by visitors circulates further within the regional economy, creating further business and employment opportunities in other businesses. The multiplier effect captures how businesses throughout the economy gain from the tourist spending attracted to central Nebraska by crane watchers. We again utilize multipliers for the central Nebraska economy calculated using the IMPLAN model.

Figure 2.1 illustrates how the economic impact from visitors to the crane migration is calculated. Direct effects are estimated through survey results. For each direct effect, there is also a multiplier effect on the central Nebraska. For each component, the total economic impact is the sum of its direct effect and its multiplier effect. This overall economic impact from off-site spending is estimated in the balance of this Chapter. As noted earlier, the key to calculating these economic impacts is to utilize our surveys of visitors.

D. Survey Results

In this section, we summarize the key results from our survey of visitors to Rowe Bird Sanctuary during 2009. This information provides background about both visitors as well as information that will be critical in calculating direct effects in later sections of this Chapter. We begin by discussing the survey of visitors.

Survey of Visitors

Survey results indicated a broad appeal of Rowe Bird Sanctuary. As seen in Table 2.3, 13% of visitors come from 12-County the central Nebraska region. Thirty-nine percent come

Table 2.3
Origin of Visitors to Rowe Sanctuary

State	% of Respondents from Each State
Central Nebraska	13%
Other Nebraska	39%
Iowa	14%
Colorado	8%
Missouri	3%
Kansas	4%
Other States	18%
Other Countries	1%

Source: UNL Bureau of Business Research Survey

from other areas within Nebraska, particularly from Omaha and Lincoln. Forty-eight percent of the visitors come from neighboring states or foreign countries.

Among those visitors who lived outside of central Nebraska, survey results indicate that the visitors had a variety of reasons for coming to Rowe. As seen in Table 2.4, the majority of visitors indicated that the crane migration was their principal reason for coming to central Nebraska. Another significant group of visitors indicated that it was among the Top 3 or 4 reasons for coming to the area. Only a small share of respondents indicated that they would have made a trip to central Nebraska regardless of crane viewing opportunities. These visitors had other motivations for coming to the region, such as business or family; for these visitors, a trip to a crane viewing site was just a chosen activity during the visit.

Table 2.4**Role of Rowe Sanctuary in Decision to Visit Central Nebraska**

Importance of Crane Viewing to Decision to Come to Nebraska	% Choosing Response
It was the Principal Reason for Coming	58%
It was one of 3 or 4 Reasons for Coming	21%
It was mentioned in the Tour Information and Looked Interesting	10%
It was not important, I was coming anyway	10%

Source: UNL Bureau of Business Research Survey

Crane viewing also could influence decisions about the length of visits to central Nebraska. In Table 2.5, for those respondents who indicated that they were already planning to visit central Nebraska, we asked whether they lengthened their trip due to an opportunity to view migrating cranes. At Rowe Bird Sanctuary, only 7% of these respondents indicated that they lengthened their trip, and then just a single day. Nevertheless, this is another marginal increase in tourism activity in the central Nebraska due to the crane migration.

Table 2.5**Extending Trip to Central Nebraska to Visit Rowe Bird Sanctuary**

Extra Days in Central Nebraska to View Cranes	% Choosing Reponse
0 days	93%
1 day	7%
2 days	0%
More than 2 days	0%

Source: UNL Bureau of Business Research Survey

E. Economic Impact of Generated Tourism: Estimates

Table 2.6 illustrates how we estimated the direct effect from visitors to Rowe Bird Sanctuary on the central Nebraska economy. We begin by estimating the number of visitors to Rowe Bird Sanctuary who are from outside of the central Nebraska region. Survey results indicated that 87.3% of visitors to Rowe Bird Sanctuary were from outside of central Nebraska. This implies that 12,660 of the 14,500 visitors to Rowe Sanctuary are from outside of central Nebraska.

Table 2.6
Direct Effect in 2009 of Visitors to Rowe Sanctuary

Number of Visitors from Outside of Central Nebraska	12,660
average increase in days spent in region	1.27
average spending per person per day (\$)	\$51.85
Direct Effect (millions of \$)	\$0.87

Source: BBR Calculations

Note: There were two other additional sources for spending among visitors. First, a portion of visitors who came to central Nebraska for other reasons extended their stay in order to view migrating cranes. Second, there also are volunteers at Rowe Sanctuary who come from all over the country to work at Rowe Sanctuary during crane migration seasons. These additional sources added another \$38,000 in direct spending in Central Nebraska due to Rowe Sanctuary. This amount was included in the total direct effect estimate reported in Table 2.6.

We then multiply the number of outside-central-Nebraska visitors by the average increase in days spent in central Nebraska per visitor due to their trip to Rowe Bird Sanctuary. Among all visitors from outside of central Nebraska, the average visitor to Rowe stayed 2.0 days in the region. However, only 58% of these visitors indicated that visiting Rowe was their main motivation for traveling to central Nebraska, and 21% indicated it was one of three or four reasons. This implies that the average visitor from outside of the region spent an additional 1.27 days in central Nebraska due to a visit to Rowe.³

³ To make this calculation, we assigned 2.0 additional days to 58% of visitors, and 0.5 additional days to 21% of visitors (the share who the region). Applying these percentages implies an average stay of 1.27 days for all (100%) visitors.

Lastly, we multiply the number of visitor days due to the crane migration by the average daily spending of visitors. The average daily spending was \$51.85 for visitors to Rowe Bird Sanctuary. Note that this average daily spending includes both day-trip and overnight visitors.

The total direct impact from tourists coming to view the crane migration in spring 2009 was \$0.87 million for visitors to Rowe Bird Sanctuary.

Direct effects are an important component of the total economic impact on the central Nebraska economy. The other component is the multiplier effect. The multiplier effect is the additional activity that is generated throughout the regional economy as off-site businesses that serve visiting tourists, and the employees of these businesses, spend money in central Nebraska.

We used economic multipliers to calculate the total economic impact resulting from the direct impact from Rowe Bird Sanctuary. Economic multipliers show the dollars of total impact for each dollar of direct impact. We used the IMPLAN (Impact Analysis for Planning) Pro modeling software developed by the Minnesota IMPLAN Group to calculate economic multipliers for the central Nebraska region. IMPLAN is widely utilized for economic impact analysis by federal government agencies, state and local governments, universities, and private businesses. IMPLAN modifies the U.S. Input-Output Accounts for local economies based on detailed economic data for counties, or combinations of counties, to produce a local Social Accounting Matrix.

Table 2.7
Total Economic Impact in 2009 of Visitors to Rowe Sanctuary

Direct Impact (Millions of \$)	\$0.87
Multiplier	1.59
Total Economic Impact (Millions of \$)	\$1.39

Source: BBR calculations

As seen in Table 2.7, the local-area multiplier calculated for spending by visitors to Rowe Bird Sanctuary is 1.59. Based on this multiplier, the total economic impact from tourist visitors to Rowe was \$1.39 million in 2009.

An important component of the overall economic impact is the number of jobs created in the economy. The total jobs impact from visitors to Rowe Bird Sanctuary in 2009 was the equivalent of 25 full-time, year-round jobs. There is a much larger number of jobs generated during the spring crane migration season, and income in these jobs is equivalent of what would be earned by 25 full-year jobs in the hospitality industry.

F. Summary of Total Economic Impact of Rowe Bird Sanctuary on Central Nebraska

We can combine the results shown in Tables 2.2 and 2.7 to display the total economic impact generated by the Rowe Bird Sanctuary, which was **\$2.08 million** in 2009.

Table 2.8
The 2009 Total Economic Impact of Rowe Bird Sanctuary on Central Nebraska

Economic Impact of Operations (Millions of \$)	Economic Impact of visitors (Millions of \$)	Total Economic Impact (Millions of \$)
\$0.69	\$1.39	\$2.08

Source: UNL Bureau of Business Research calculations.

We can express this total impact in terms of the full-time, year-round-equivalent jobs created. Operations expenditures at Rowe Bird Sanctuary produce 11 full-time equivalent jobs, and off-site spending by Rowe visitors produces another 25 jobs. The total jobs impact is thus 36 full-time, year-round-equivalent jobs associated with activities at Rowe.

Chapter 3: The Economic Impact of On-Site Activity at and Visitors Attracted to Conservation Research and Education Centers (Combined)

This Chapter repeats the analysis of the previous chapter using as its subject of analysis the combined data from the principal conservation research and education centers. Four centers are included: Rowe Bird Sanctuary, Platte River Whooping Crane Trust, Wings Over the Platte, and the Ft. Kearny State Recreational Center.

A. Economic Impact of Direct Expenditures: Methodology

The first step in estimating the economic impact of the combined conservation research and education centers on central Nebraska is to estimate new money attracted to the region for their operations, research, and conservation. External demand for these services is represented in large part by the donations and grants that individuals and organizations from outside central Nebraska make to support the region's centers or by other revenues from outside the region that flow to support these centers. This external demand represents the "direct effect" on the central Nebraska economy from the (externally-financed) activities of the combined centers.

In addition to this direct effect, there is also a "multiplier" effect on businesses throughout central Nebraska. The multiplier effect occurs as the initial spending on research, conservation, or education activities of the centers circulates further within the regional economy, creating additional sales and employment opportunities in other businesses. For example, there is a multiplier effect when Rowe Bird Sanctuary purchases services from central Nebraska companies such as accounting services, legal services, or supplies. There is also a multiplier effect when employees of the Central Platte Whooping Crane Trust spend their paychecks throughout the local economy on typical household expenditures such as food, health care, housing, insurance, apparel, and entertainment. Thus the multiplier effect captures how businesses throughout the regional economy gain from the money attracted to central

Nebraska. Specifically, economic multipliers show the dollars of total impact for each dollar of direct impact.

We used the IMPLAN (Impact Analysis for Planning) Pro modeling software developed by the Minnesota IMPLAN Group to calculate economic multipliers for the central Nebraska region. The IMPLAN is widely utilized for economic impact analysis by federal government agencies, state and local governments, universities, and private businesses. IMPLAN modifies the U.S. Input-Output Accounts for local economies based on detailed economic data for counties, or combinations of counties, to produce a local Social Accounting Matrix.

The left-hand side of Figure 3.1 illustrates how the economic impact of operational expenditures of the centers is calculated. We begin with the direct effect, which is external dollars attracted into the central Nebraska region by the combined centers. In addition to this direct effect, there is also a multiplier effect on the regional economy. The total economic impact is the sum of its direct effect and its multiplier effect.

The right-hand side of Figure 3.1 illustrates how the economic impact from visitor spending is calculated for the crane centers. The process is the same. We first measure the visitor spending attracted into central Nebraska by the centers, as a measure of the direct. There is also a multiplier effect and the total economic impact is the sum of the direct effect and multiplier effect.

The overall economic impact is simply the sum of the total operations economic impact and the total visitor spending economic impact, as is seen at the bottom of Figure 3.1. This overall economic impact is estimated in the balance of this Chapter.

As implied by Figure 3.1, a key issue in calculating the overall economic impact is to estimate accurately the direct effects, that is, the external donations, grants or other support for research, conservation, and education and the off-site visitor spending.

Figure 3.1
Approach for Calculating Economic Impact of the Principal Conservation and Research Centers (Combined) on Central Nebraska

**Economic Impact from
Operation of Combined Centers**

Direct Effect –
Annual spending at
Combined Centers'
operations supported by
grants and donations

+

Multiplier Effect

=

Total economic impact
from operation of
Combined Centers



**Economic Impact from
Visitors to Combined Centers**

Direct Effect -
Annual off-site spending by
Centers' visitors from
outside of Cent. Nebraska

+

Multiplier Effect

=

Total economic impact
from visitors to Combined
Centers



Overall Economic Impact of Combined Centers on Central Nebraska

Financial records from the centers were very used to determine their direct effect on the central Nebraska economy. We included on the financial records at the Rowe Bird Sanctuary and the Platte River Whooping Crane Trust. This is because the Fort Kearny State Recreation Center is a multi-faced recreation destination. Most crane watching occurs at a bridge over the Platte that is part of a walking trail. There are not large expenditures specifically in support of crane watching. The Wings Over the Platte center is dedicated to crane watching, but is staffed by volunteers. This volunteer time undoubtedly has great value, but cannot be treated as paid staff creating a local economic impact. Thus, when considering the economic impact from operations it is most appropriate to focus on the impact resulting from spending by the Rowe Sanctuary and the Whooping Crane Trust.

As is displayed in Table 3.1, these two centers derive nearly all of their revenues from external sources such as grants, donations, and trust transfers (Edwards and Thompson, 2010). Tourist activities are another important source of revenue. Altogether, the centers derive 78% of their revenue from external sources.

Table 3.1
Sources of Crane Centers' Funds in Central Nebraska 2009

Category	Amount (Millions \$)
Volunteer Fees/Tuition	0.004
Transfer from Trust	0.71
Donations	0.11
Grants	0.42
Land Rental	0.35
Store Merchandise	0.08
Tourist Activities	0.10
Other	0.00
Total Revenue	1.78

Source: 2009 Budget Projections of the Rowe Sanctuary and the Platte River Whooping Crane Maintenance Trust, Inc.

B. Economic Impact of Direct Expenditures: Estimates

Table 3.2 lists the revenue of the combined centers and the share of that revenue that comes from external sources. The direct effect from the centers' operations was \$1.31 million during fiscal year 2009.

Table 3.2
Direct Effect of Crane Centers on Central Nebraska in 2009

	Rowe Sanctuary
Research and Education Center Operations	
Revenue (millions \$)	1.78
% supported by external donations and grants	78%
% supporting expenditures in 2009	95%
Direct Effect (millions \$)	1.31
Multiplier	1.71
Total Economic Impact (millions \$)	2.25

Source: BBR Calculations

Direct effects are a key component of the total economic impact on the central Nebraska economy. The other component is the multiplier effect. The multiplier effect is the additional activity that is generated throughout the central Nebraska economy 1) as the crane centers purchase goods and services, and 2) as their employees spend their paychecks on local goods and services. As noted earlier, economic multipliers were calculated using the IMPLAN Pro model and then applied to calculate the total economic impact of the crane centers. Economic multipliers show the number of dollars of total economic impact associated with each dollar of direct effect. The multiplier for the combined centers is 1.71. Based on this multiplier, the total economic impact of the combined centers in 2009 was \$2.25 million.

An important component of the overall economic impact is the impact on the labor force, that is, the jobs created in the economy. There was a total jobs impact of 37 full-year equivalent jobs due to the operations of the centers in 2009.

C. Economic Impact of Generated Tourism: Methodology

This section examines the additional economic impact from off-site spending by visitors to the centers who are attracted to central Nebraska each year by the annual crane migration. We attribute such visitors to the centers. Visitors are typically “tourists” who travel to visit central Nebraska for one day or more. This section addresses their off-site spending in restaurants, gift-shops, lodging, or other businesses in central Nebraska. This off-site spending represents an additional economic impact from the annual crane migration.

In many cases, tourists who view or learn about cranes come to central Nebraska primarily for that purpose. In these cases, their spending during their visit to central Nebraska can fairly be considered as an economic impact of crane migration. In other cases, cranes are not the primary reasons visitors come to central Nebraska. For example, such visitors may come to the area primarily to visit family, but then visit a crane viewing site as an activity. But even among this group there are visitors who stay longer in the country because of an opportunity to visit a crane viewing site. The additional amounts that tourists spend due to longer trips are another aspect of the economic impact of the crane migration.

Figure 3.1 illustrates how the economic impact from visitors due to the crane migration is calculated. Direct effects are estimated through survey results. For each direct effect, there is also a multiplier effect on the central Nebraska. For each component, the total economic impact is the sum of its direct effect and its multiplier effect. This overall economic impact from off-site spending is estimated in the balance of this Chapter. As noted earlier, the key to calculating these economic impacts is to utilize our surveys of visitors.

The first step in estimating the economic impact of tourism spending is to estimate the total number of visitors to the four centers during the 2009 crane migration season. Rowe Bird Sanctuary reported an attendance of 12,500 during the season, and there were an estimated 14,500 visitors over 12 months. Wings Over the Platte reported 9,000 crane-viewers during the 2009 season. For Fort Kearny State Recreational Area, there is no recording of visitor numbers at the crane-viewing bridge, so we estimated attendance for it; we estimate that 3,700 tourists

visited during the 2009 crane migration season.⁴ And because there are few tourists who visit the Whooping Crane Trust, we ignored tourists at this site. This approach yields an estimate of 27,200 visitors due to the crane migration.

The second step in estimating the economic impact of tourists is to estimate the spending by visitors who came to central Nebraska primarily to due to the crane migration (or perhaps for the crane migration and a few other key purposes), or visitors who primarily came to central Nebraska for other reasons but chose to extend their stay longer in order to visit a crane viewing site. This new spending represents a new demand on the Central Nebraska economy. It is the direct effect on the economy.

For the portion of our survey relevant to this Chapter, we conducted interviews of visitors to Rowe Bird Sanctuary (described in the previous Chapter); we also surveyed at the Fort Kearny State Recreational Area viewing bridge on March 17 and 28, 2009. A survey similar to that used at Rowe was distributed to visitors at the bridge at Fort Kearny. Surveys asked respondents about their country of origin, their zip code (for U.S. visitors), their reasons for visiting central Nebraska, the length of their trip and their spending patterns.

Surveys were distributed to 81 visitor parties who indicated that they would not attend Rowe Bird Sanctuary on that day. Of the 81 visitor parties, 70 completed the survey, for an 86% response rate. We used survey results from visitors to both Rowe and Ft. Kearny to estimate the additional spending in central Nebraska due to these tourists. This direct effect is seen on the right-hand side of Figure 3.1.

In addition to this direct effect from visitors, there is also a multiplier effect at businesses throughout Central Nebraska, as is seen in Figure 3.1. This multiplier effect occurs as the initial spending by visitors circulates further within the regional economy, creating further business and employment opportunities in other businesses. The multiplier effect captures how businesses throughout the economy gain from the tourist spending attracted to central

⁴ We distributed surveys at Ft. Kearny on days when we also were distributing surveys at Rowe Bird Sanctuary. Since we interviewed all visitor parties as they visited each site, we were able to estimate a ratio of visitors to each site relative to Rowe Bird Sanctuary. For example, during our two days distributing surveys at Fort Kearny, we found that there were approximately three visiting parties (who were not also visiting Rowe Sanctuary) to the viewing platform at Fort Kearny State park for every ten visiting parties to Rowe Bird Sanctuary; we used this ratio to calculate the estimate reported above.

Nebraska by crane watchers. We calculated multipliers for the central Nebraska economy using the IMPLAN model.

D. Survey Results

In this section, we summarize the key results from our survey of visitors to the combined centers during 2009. This information provides background both about visitors as well as information that will be critical in calculating direct effects in later sections of this Chapter. We begin by discussing the survey of visitors.

Survey of Visitors

Survey results indicated a broad appeal of the central Nebraska crane viewing sites. As seen in Table 3.3, 12% of visitors come from 12-County the central Nebraska region. Thirty-nine percent come from other areas within Nebraska, particularly from Omaha and Lincoln. Forty-nine percent come from neighboring states or foreign countries. Overall, results in Table 3.3 indicate that the crane migration attracts 88% of its visitors from outside of central Nebraska.

Table 3.3
Origin of Visitors to Central Nebraska Crane Viewing Sites

State	% of Respondents from Each State
Central Nebraska	12%
Other Nebraska	39%
Iowa	11%
Colorado	9%
Missouri	3%
Kansas	4%
Other States	20%
Other Countries	1%

Source: UNL Bureau of Business Research Survey

Among those visitors who lived outside of central Nebraska, survey results indicate that the visitors had a variety of reasons for coming to the region. As seen in Table 3.4, the majority of visitors indicated that the crane migration was their principal reason for coming to central Nebraska. Another significant group of visitors indicated that it was among the Top 3 or 4

reasons for coming to the area. Only a small share of respondents indicated that they would have made a trip to central Nebraska regardless of crane viewing opportunities. These visitors could have had other motivations for coming to the region, such as business or family. For these visitors, a trip to a crane viewing site was just a chosen activity during the visit.

Table 3.4
Role of Crane Viewing Site in Decision to Visit Central Nebraska

Importance of Crane Viewing to Decision to Come to Nebraska	% Choosing Response
It was the Principal Reason for Coming	62%
It was one of 3 or 4 Reasons for Coming	21%
It was mentioned in the Tour Information and Looked Interesting	10%
It was not important, I was coming anyway	9%

Source: UNL Bureau of Business Research Survey

Crane viewing also could influence decisions about the length of visits to central Nebraska. In Table 3.5, for those respondents who indicated that they were already planning to visit central Nebraska, we asked whether they lengthened their trip due to an opportunity to view migrating cranes. At the combined centers, only 5% of these respondents indicated that they lengthened their trip, and then just a single day. Nevertheless, this is another marginal increase in tourism activity in the central Nebraska due to the crane migration. None of the respondents interviewed at the viewing bridge at Fort Kearny indicated that they lengthened their trip.

Table 3.5
Extending Trip to Central Nebraska to Visit Crane Viewing Site

Extra Days in Central Nebraska to View Cranes	% Choosing Reponse
0 days	95%
1 day	5%
2 days	0%
More than 2 days	0%

Source: UNL Bureau of Business Research Survey

E. Economic Impact of Generated Tourism: Estimates

Table 3.6 illustrates how we estimated the direct effect of visitors to the centers on the central Nebraska economy. We begin by estimating the number of visitors to the centers who are from outside of the central Nebraska region. Survey results indicated that 87% of visitors to Rowe Bird Sanctuary and 90% of visitors to other viewing sites were from outside of central Nebraska. This implies that 12,660 of the 14,500 visitors to Rowe Sanctuary during the crane migration are from outside of central Nebraska, as are 11,430 of the 12,700 visitors to other crane viewing sites. The total number of outside-the-region visitors was 24,090.

We then multiply the number of outside visitors by the average increase in days spent in central Nebraska per visitor due to their trip to the centers. Among all visitors from outside of central Nebraska, the average visitor to Rowe Bird Sanctuary stayed 2.0 days in the region. However, only 58% of these visitors indicated that visiting Rowe was their main motivation for traveling to central Nebraska, and 21% indicated it was one of three or four reasons. This implies that the average visitor from outside of the region spent an additional 1.27 days in central Nebraska due to a visit to Rowe. The average visitor to Fort Kearny spent 1.8 days in the region. However, 80% of these came to central Nebraska primarily to view cranes. This implies that the average visitor to these sites spent an additional 1.48 days in central Nebraska due to the crane migration. When combined, the average increase for Rowe plus the other site was 1.31 days. These combined data apply to crane watchers at the Rowe Bird Sanctuary and the Platte River State Recreation Area. Further, since we were not able to survey at the Wings Over the Platte center, we assume that these averages are also an appropriate estimate for visitors to Wings Over the Platte.

Lastly, we multiply the total visitor days by the average daily spending of visitors. The average daily spending was \$51.85 for visitors to Rowe Bird Sanctuary, and \$54.79 for crane-watching visitors to Fort Kearny State Recreation Area; for all visitors, the average was \$52.45. Note that these average daily spending include both day-trip and overnight visitors. The total direct impact of visitors to the combined centers in 2009 was \$1.83 million.

Table 3.6

Direct Effect in 2009 of Visitors to Central Nebraska Crane Viewing Sites

Number of Visitors from Outside of Central Nebraska	24,090
average increase in days spent in region	1.31
average spending per person per day (\$)	\$52.45
Direct Effect (millions of \$)	\$1.83

Source: BBR Calculations

Note: There were two other additional sources for spending among visitors. First, a portion of visitors who came to Central Nebraska for other reasons did extend their stay in order to view migrating cranes. Second if, there also are volunteers at Rowe Sanctuary who come from all over the country to work at Rowe Sanctuary during crane migration seasons. These additional sources added another \$69,000 in direct spending in Central Nebraska due to the research and education centers. This amount was included in the total direct effect estimate reported in Table 3.6.

Direct effects are an important component of the total economic impact on the central Nebraska economy. The other component is the multiplier effect. The multiplier effect is the additional activity that is generated throughout the regional economy as off-site businesses that serve visiting tourists, and the employees of these businesses, spend money in central Nebraska.

We used economic multipliers to calculate the total economic impact resulting from visitors to central Nebraska at the combined centers. Economic multipliers show the dollars of total impact for each dollar of direct impact. We used the IMPLAN (Impact Analysis for Planning) Pro modeling software developed by the Minnesota Implan Group to calculate economic multipliers for the central Nebraska region. IMPLAN modifies the U.S. Input-Output Accounts for local economies based on detailed economic data for counties, or combinations of counties, to produce a local Social Accounting Matrix.

Table 3.7

Total Economic Impact in 2009 of Visitors to Central Nebraska Crane Viewing Sites

Direct Impact (Millions of \$)	\$1.83
Multiplier	1.59
Total Economic Impact (Millions of \$)	\$2.90

Source: BBR Calculations

As seen in Table 3.7, the multiplier calculated for visitor spending is 1.59 for the centers. Based on this multiplier, the total economic impact from tourist visitors to the combined centers was \$2.90 million in 2009.

An important component of the overall economic impact is the number of jobs created in the economy. The total jobs impact from visitors to the combined centers in 2009 was 53 full-year equivalent jobs. There are a much large number of jobs generated during the spring crane migration season, and the income in these jobs is equivalent of what would be earned by 53 full-year jobs in the hospitality industry.

F. Summary of Total Economic Impact of the Principal Centers (Combined) on Central Nebraska

We can combine the results shown in Tables 3.2 and 3.7 to display the overall economic impact generated by crane-related centers in central Nebraska during 2009. The overall economic impact from both center operations and crane visitors was **\$5.15 million** in 2009, as is seen in Table 3.8.

Table 3.8
The 2009 Total Economic Impact of the Principal Conservation Centers (Combined) on Central Nebraska

Economic Impact of Operations (Millions of \$)	Economic Impact of visitors (Millions of \$)	Total Economic Impact (Millions of \$)
\$2.25	\$2.90	\$5.15

Source: UNL Bureau of Business Research calculations.

The total impact of operations expenditures and tourist spending can be expressed in terms of the number of full-time, year-round-equivalent jobs created. The combined centers produced 90 full-year equivalent jobs in fiscal 2009.

Chapter 4: Global Estimate of the Impact of the Crane Migration on the Central Nebraska Economy

Our study focused on the contributions of conservation research and education centers on the economy of central Nebraska. The results reported in Chapters 2 and 3 are, in our judgment, solidly based on the data we collected and developed, and therefore we have considerable confidence in them.

It is also possible to estimate, though with less confidence, the overall impact of crane-watching on the central Nebraska economy. To do so, we must combine our data with information obtained from elsewhere – principally the surveys conducted by Lingle (1992) and Fermata, Inc. (1998) in their studies – and make certain additional and somewhat speculative assumptions. These efforts necessarily introduce more uncertainty into the estimate reported here than those reported in previous chapters. Nonetheless, the result is a good estimate of the overall or “global” impact of the crane migration on central Nebraska economy.

To make a global estimate, we will add together three components (displayed in Table 4.2):

a) First, we will add from Table 3.8 the estimate of the economic impact of conservation centers' operational expenditures;

b) Next, we will add from Table 3.8 the estimate of the economic impact of off-site spending by visitors attracted to the four principal research and education centers;

c) Finally, we will construct and add an estimate of the off-site spending by other crane-watchers coming to the region – what we term “non-center crane-related visitors”. Spending by this group of visitors is just as real as that of visitors coming to the centers and just as certainly contributes to the local economy, but the nature of our data about them creates greater uncertainty about the accuracy of our estimate.

To estimate the total number of non-center crane-watching visitors, we utilized the estimates prepared by Lingle (1992). Lingle estimated a total of 80,000 crane watchers coming to the Kearney and Grand Island areas in 1991 during the migration season. Crane-watching had already gained significant popularity at that time, and Lingle’s estimate is perhaps already somewhat generous (see Appendix B), so any subsequent growth is probably incorporated in

Lingle’s estimate. In the absence of additional information, we adopt his number. We also add in the 2,000 visitors to Rowe Sanctuary who visited outside of the spring migration season. Therefore we utilize a figure of 82,000 total visitors. Based on our survey results we estimate that 90% of these visitors, or 73,800, were from outside of the central Nebraska region. As seen in Table 4.1, given that our attendance estimates from research and education centers were for 24,090 outside visitors to central Nebraska in 2009, we therefore estimate an additional 49,710 “non-center crane-related visitors” to the central Nebraska region,.

Table 4.1
Estimated Non-Center Crane-Related Visitors from Outside of Central Nebraska

Total Number of Visitors (Lingle, 1991)	80,000
Percent from outside of Central Nebraska	90%
Estimated Total Number of Visitors from Outside of Central Nebraska	72,000
Number of Visitors to Research and Education Centers from Outside of Central Nebraska	22,280
Non-Center Crane-Related Visitors	49,720

Source: BBR Calculations

To develop an estimate of off-site spending by central Nebraska non-center crane-related visitors, we also surveyed at the Hall County viewing site on March 22. We obtained a total of 38 completed surveys. We then combined our survey results from Hall County to our survey results for Rowe Sanctuary and Fort Kearny. As seen in Table 4.2, there was an average daily spending of \$47.43, and an average increase of 1.35 days in central Nebraska. We multiplied the daily spending average reported on these surveys by the total number of non-center visitors, and the average trip length (which was similar to center visitors) to yield a direct spending estimate of \$3.26 million in 2009.

Table 4.2
Direct Effect in 2009 of Non-Center Crane-Related Visitors

Number of Visitors from Outside of Central Nebraska	49,710
average increase in days spent in region	1.35
average spending per person per day (\$)	\$47.43
Direct Effect (millions of \$)	\$3.26

Source: BBR Calculations

Note: There was one additional source for spending among visitors: a portion of visitors who came to Central Nebraska for other reasons extended their stay in order to view migrating cranes. These additional sources added another \$75,000 in direct spending in Central Nebraska. This amount was included in the total direct effect estimate reported in Table 4.2.

We also add in the multiplier effect in order to estimate the total economic impact on the central Nebraska economy, as is seen in Table 4.3. The total economic impact is \$5.18 million.

Table 4.3
Total Economic Impact in 2009 of Non-Center Crane-Related Visitors to Central Nebraska

Direct Impact (Millions of \$)	\$3.26
Multiplier	1.59
Total Economic Impact (Millions of \$)	\$5.18

Source: BBR Calculations

In Table 4.4 below, we present the overall or global economic impact of 2009 sandhill crane migration on the central Nebraska economy. We include the budgets of crane-related centers and spending by crane-related visitors attracted to central Nebraska (both visitors to crane centers or those who visited other locations). The annual economic impact is **\$10.33 million**.

We can express this total impact in terms of the full-time, year-round-equivalent jobs created. The total jobs impact associated with a global estimate of \$10.33 million economic impact is 184 full-time, year-round-equivalent jobs. That is, 184 jobs in the central Nebraska region may be said to be dependent upon the crane migration.

Table 4.4

The 2009 Total Economic Impact of the Crane Migration on Central Nebraska

Economic Impact of Operations (Millions of \$)	Economic Impact of visitors (Millions of \$)	Total Economic Impact (Millions of \$)
\$2.25	\$8.08	\$10.33

Source: BBR Calculations

Chapter 5: Conclusions

This study examined the economic impact of Rowe Bird Sanctuary and other principal conservation research and education centers on the central Nebraska region during the 2009 spring sandhill crane migration season. To do so, we estimated both the impact of the operational expenditures of Rowe and (combined) the four principal conservation centers and of spending by crane-related visitors attracted to the region. We also generated an estimate of the overall ("global") impact of the crane migration on central Nebraska. We found that both of these impacts make a significant economic contribution to the central Nebraska economy.

Table 5.1
Summary of 2009 Total Economic Impact of the Crane Migration on Central Nebraska

	Economic Impact From (Millions of \$)			
	Expenditures	Visitors	Total	Total Jobs
Rowe	\$0.69	\$1.39	\$2.08	36
4 Principle Centers	\$2.25	\$2.90	\$5.15	90
All Crane Related Activites	\$2.25	\$8.08	\$10.33	184

Note: Results vary by level of aggregation and should not be added together.

Our finding is that in 2009 the Rowe Bird Sanctuary had a total economic impact of \$2.08 million and 36 jobs on the central Nebraska economy. Taking the principal crane-related conservation research and education centers (including Rowe) together, these centers had a total economic impact of \$5.15 million and 90 full-time, year-round jobs on the central Nebraska economy. The global economic impact of the crane migration on central Nebraska was \$10.33 million in 2009, supporting 184 year-round equivalent jobs.

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Appendix A
Survey of Visitors to the Rowe Bird Sanctuary
(Please Complete One Survey Per Group)

Your answers to this questionnaire will be an important part of a study of the economic impact of the Rowe Bird Sanctuary. Your answers will be completely CONFIDENTIAL and ANONYMOUS. We appreciate your taking the time to complete the form.

1. In which Country do you live? _____.
2. If you live in the United States, what is your zip code? _____.

Please estimate your family's spending TODAY in the following categories. Please include ALL spending; for example, include dining and shopping at area restaurants and stores.

- | | |
|--------------------------------------|----------|
| 3. Travel | \$ _____ |
| 4. Food | \$ _____ |
| 5. Hotel or other lodging | \$ _____ |
| 6. Shopping & Gifts | \$ _____ |
| 7. Gasoline | \$ _____ |
| 8. Other Entertainment or Recreation | \$ _____ |
| 9. Other, please specify: _____ | \$ _____ |

10. What percentage of this spending occurred in the Kearney-Grand Island-Hastings area? _____%
11. How many people are included in the above spending? _____

IF YOU DO NOT LIVE IN KEARNEY-GRAND ISLAND-HASTINGS AREA, PLEASE ANSWER QUESTIONS 12-14 TO COMPLETE THE SURVEY

12. How many days will you be visiting the Kearney-Grand Island-Hastings area? _____ days
13. How important was the Rowe Bird Sanctuary in your decision to come to Kearney-Grand Island-Hastings area? (Please check ONLY ONE response)
 It was the principal reason I came to the area
 It was one of three or four reasons that I came to the area
 It was mentioned in local visitors guides and looked interesting
 It was not very important, because I would have come to area anyway
14. How many extra days will you stay in Kearney-Grand Island-Hastings area because you are visiting the Rowe Bird Sanctuary?
 0 days (visiting the Rowe Bird Sanctuary Fund has no effect on the length of my trip)
 1 day
 2 days or more (please list how many additional days _____)

IF YOU LIVE IN THE KEARNEY-GRAND ISLAND-HASTINGS AREA, PLEASE ANSWER QUESTION 15 IN ORDER TO COMPLETE THE SURVEY

15. If the Rowe Bird Sanctuary did not exist, which of the following would you MOST likely do? (Please check ONLY ONE response)
 View the Cranes at another location in the Kearney-Grand Island-Hastings area.
 Go to a different attraction in the Kearney-Grand Island-Hastings area.
 Go to an attraction in a different area
 Spend the money on something else

THANK YOU VERY MUCH FOR YOUR ANSWERS TO THIS IMPORTANT SURVEY!

Appendix B: Previous Studies of the Economic Impact of the Sandhill Crane Migration

The economic impact of tourists who come to central Nebraska to view the sandhill cranes has been assessed several times, most notably by Gary Lingle (1991) and the Fermata company (1998). For reasons given below, we have serious concerns about the quality of the estimates in both of these studies.

Lingle. Lingle used vehicle counters, questionnaires, and tabulations of various facilities' visitor logs to estimate both the number of visitors and their economic impact.

Lingle's study counted vehicles passing in both directions on a section of the Platte River Road southwest of Grand Island. He assumed that roughly 83% (10,000 out of a total of 12,002 vehicles) were "bona fide" crane-watchers. He further assumed that crane-watcher vehicles carried an average of 4 persons, yielding a total of 40,000 crane-watchers. To account for crane watchers who visited crane-watching areas other than his study location, he doubled the estimate to 80,000 crane watchers. The result, in our judgment, is an uncertain estimate of crane-watchers (for example, no justification is given for assuming that 83 percent of the Platte River Road travelers were crane-watchers). We utilize this estimate in our global estimate of the impact of the crane migration on central Nebraska (Chapter 4); but we acknowledge that our global estimate as a result is "speculative" because it relies on some "questionable assumptions."

Lingle then drew upon the results of a different survey of 350 respondents that found crane-watchers stayed an average of 2.7 days in the region and spent \$69.23 per person per day. He multiplied his 80,000 crane-watchers by 2.7 days per visitor and by \$69.23 spending per day to reach his estimate of nearly \$15 million in crane-visitor spending. In our view, his failure to separate spending by within-region visitors from outside-the-region visitors confounds new spending in the region with spending that would likely have occurred anyway. Further, even in the case of outside-the-region visitors, Lingle might have considered whether the visitors came to central Nebraska primarily to view the crane migration, or whether they would have been in the region anyway for other reasons, such as visiting friends and family. Additionally, as we explain in Chapter 2, he should have corrected his new spending estimate to include only the "mark-up" portion.

The result of his methodology, in our judgment, was to unduly inflate the overall economic impact of the spring crane-watching.

Fermata. The Fermata study defined a Middle Platte River Study Area, an 80-mile segment of the river stretching from Columbus, NE, to North Platte, NE. Fermata found that in 1996 between 14,500 and 22,715 outside-the-region tourists arrived in the area to watch cranes. Travelers who resided in Nebraska but outside the Study Area stayed longer and spent more per-day than local residents, and out-of-state crane-watchers stayed the longest and spent the most. In a feature often missed in public discussion of Fermata's results, Fermata estimated the economic impact of the crane-watchers' spending *on any bird-watching activities throughout the entire year*. It found that the annual economic impact of wildlife watching on the Platte River to be between \$25.1 million and \$37.4 million.

Fermata recognized that Lingle's visitor estimates were likely too high and that they failed to distinguish outside-the-region visitors from within-region visitors. Through its own surveys Fermata developed estimates of outside-the-region visitors. (Fermata's Middle Platte River Study Area is a large region that incorporates an 80-mile stretch of the river.) Fermata estimated that in 1996 there were between 14,500 and 22,715 crane-watching visitors to the Study Area. Note that this range coincides rather closely with our estimate of 24,090 outside-the-region crane-related visitors to central Nebraska in 2009.

The Fermata study noted the discrepant estimates of total bird-watcher numbers between the Lingle study and its own. It explained the difference as follows: "Lingle based his estimate, in large part, on traffic counts. One would expect that most of Lingle's visitors were 'day-trippers,' small groups out for a day's drive to see the cranes. For [the Fermata] survey, the number of 'day-trippers' along the Platte was considered the difference between [the Fermata] study's nature tourist estimate (14,500 - 22,715) and Lingle's 80,000 'crane watchers'; that is, roughly 60,000 'day-trippers'." Thus Fermata also adopted Lingle's speculative estimate of 80,000 visitors, but it interpreted that number as including 60,000 within-region visitors ("day-trippers"). We have no way of evaluating whether that approach is correct.

The Fermata study has other weaknesses as well. Its survey indicated that crane-watchers spent an average of 7.04 days annually within the Study Area on bird watching.

Fermata used this figure to calculate total crane-watcher days; however, this adjustment effectively transformed the study from one of crane-watchers to one of bird-watchers generally. Moreover, the figure of 7.04 days per year was improperly constructed using within-region respondents (259) as well as outside-the-region respondents (736). Understandably, within-region respondents spent many more days in their own region on bird-watching (14.7 days per year) than outside-the-region respondents spent in the Study Area (4.4 days), and their inclusion inflated the average. The total of bird-watching days was then multiplied by \$79.48, the average per-day spending of outside-the-region visitors. The resulting estimate is therefore substantially inflated, making it a dubious estimate.

Fermata also failed to correct spending to include only the “mark-up” portion. Further, Fermata also assumed that all outside-the-region visitors were primarily in central Nebraska for crane viewing, rather than for other purposes, such as visiting friends and family. As a result of these and other weaknesses, the Fermata study in our judgment substantially over-stated the impact of crane watching.

Differences with the present study. There are several differences between our study and those of Lingle and Fermata. First, our twelve-county region of central Nebraska is smaller than Fermata's Middle Platte River Study Area (the region of Lingle’s study was not clearly defined). Second, unlike Fermata, we do not estimate the "consumers' surplus" associated with crane-watching. Consumers' surplus is roughly the *unpaid-for* benefit that birders realize from crane watching. Third, unlike either Lingle or Fermata, we correct visitor spending to include only the mark-up portion, and we focus on the spending of visitors from outside of the region who are traveling to the area largely due to their interest in cranes, rather than some other purpose, such as visiting friends and family. And fourth and most importantly, we include the additional economic activity generated for the region by direct expenditures of the Rowe Bird Sanctuary and other crane-related conservation organizations; both Lingle and Fermata failed to do so.